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     (FILE 'HOME' ENTERED AT 07:05:03 ON 11 JUN 2002)
     FILE 'REGISTRY' ENTERED AT 07:05:22 ON 11 JUN 2002
            E RUTHENIUM OXIDE/CN
L1        1 S E70
L2        9 S E4-14
            SEL NAME L1
     FILE 'CA' ENTERED AT 07:08:19 ON 11 JUN 2002
L3     1573 S L1-2 OR E1-6 OR RUO4
L4       25 S L3 AND(POLYPROPYLENE OR POLYPROPENE OR(POLYMER OR HOMOPOLYMER(3A)
            (PROPYLENE OR PROPENE))
            S L3 AND 25085-53-4/REG#
     FILE 'REGISTRY' ENTERED AT 07:15:03 ON 11 JUN 2002
L5             1 S 25085-53-4/RN
     FILE 'CA' ENTERED AT 07:15:04 ON 11 JUN 2002
L6    14398 S L5
L7       10 S L3 AND L6
L8     1548 S L3 NOT L4,L7
L9      547 S L8 AND(DETECT? OR DETERMIN? OR MEASUR? OR MONITOR? OR ANALY? OR
            ASSAY? OR ASSES? OR QUANTIF? OR QUANTITAT? OR SENSE# OR SENSING)
L10     148 S L8 AND(DETECT? OR DETERMIN? OR MEASUR? OR MONITOR? OR ANALY? OR
            ASSAY? OR ASSES? OR QUANTIF? OR QUANTITAT? OR SENSE# OR SENSING)/TI
L11      15 S L9 AND(CONDUCTI? OR CONDUCTA? OR RESISTAN? OR RESISTIV?)
L12     103 S L3(5A)(DETECT? OR DETERMIN? OR MEASUR? OR MONITOR? OR ANALY? OR
            ASSAY? OR ASSES? OR QUANTIF? OR QUANTITAT? OR SENSE# OR SENSING)
L13      39 S L10 AND L12
L14     109 S L10 NOT L12
L15      14 S L14 AND(GASEOUS OR VOLATILE OR VAPOR OR VAPOROUS)
L16      93 S L4,L7,L11,L13,L15

=> d l16 bib,ab 1-93
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L16 ANSWER 5 OF 93 CA COPYRIGHT 2002 ACS
AN 131:45298 CA
TI **RuO4** staining and lamellar structure of α- and β-PP
AU Li, J. X.; Cheung, W. L.
CS Department of Mechanical Engineering, University of Hong Kong, Hong Kong, Hong Kong
SO Journal of Applied Polymer Science (1999), 72(12), 1529-1538
AB Monoclinic (α) and hexagonal (β) **polypropylene** (α- and β-PP) were stained in the vapor of a **ruthenium tetroxide** soln. prepd. in situ. The effect of staining on the fusion behavior was investigated using a DSC. A staining duration between 10 and 24 h was found suitable for obtaining a good electron contrast between the cryst. and amorphous regions for TEM examn. without causing severe damage to the crystals. The spherulites of the water-quenched α-PP were found to be composed of very fine cross-hatched lamellae whose long period was about 10 nm. In comparison, the β-PP spherulites crystd. isothermally at 130°C had a category 2 morphol. and the lamellae have a long period of 20 nm. The morphol. of the spherulite boundary varied depending on the contact angle between the lamellae of the neighboring spherulites.

Main TP1.J62

L16 ANSWER 16 OF 93 CA COPYRIGHT 2002 ACS
AN 127:81989 CA
TI New method for the characterization of domain morphology of polymer blends using **ruthenium tetroxide** staining and low voltage scanning electron microscopy (LVSEM)

AU Brown, G. M.; Butler, J. H.
CS Baytown Polymers Cent., Exxon Chemical Company, Baytown, TX, 77520, USA
SO Polymer (1997), 38(15), 3936-3945
AB A new method has been developed for the anal. of domain morphol. of stained polyolefin blends by low-voltage SEM (LVSEM). The component polymers of the blend are differentiated by heavy staining with **RuO4**. LVSEM at low accelerating voltages provides high-resoln. imaging and minimal beam damage to the sample. The method is routinely applied to the anal. of domain morphol. in molded samples, fibers and films, to failure anal. and to the anal. of layer morphol. of co-extruded films.

main TP156.P6P8

L16 ANSWER 18 OF 93 CA COPYRIGHT 2002 ACS
AN 125:330399 CA
TI Linear low-density polyethylene addition to **polypropylene**/elastomer blends: phase structure and impact properties
AU Holz, N.; Goizueta, G. S.; Capiati, N. J.
CS Plapiqui (UNS-Conicet), Bahia Blanca, Argent.
SO Polym. Eng. Sci. (1996), 36(22), 2765-2770
AB Morphol. features and effects of particle size and compn. of the disperse phase on impact properties have been studied for isotactic **polypropylene**-ethylene-propylene-diene terpolymer elastomer (EPDM)-linear low-d. polyethylene (LLDPE) blends. The blend components were mixed in a twin-screw extruder, press molded, and analyzed by SEM (fractured and toluene etched samples) and by transmission electron microscopy, TEM, (**RuO4** stained samples). TEM was most effective for the identification of component distribution and particle size measurement. An increasing degree of LLDPE and EPDM interpenetration was obsd. with increasing LLDPE content. Neat component sepn. was not detected. LLDPE addn. improves the EPDM dispersibility, affecting mainly the larger particles. The impact properties at room temp. were esp. dependent on the rubber content, whereas at low temp. the particle diam. appears to be the controlling parameter. The effect of LLDPE on blend toughness is more evident in the latter case.

L16 ANSWER 22 OF 93 CA COPYRIGHT 2002 ACS
AN 124:147633 CA
TI Morphology and mechanical properties of blends of isotactic or syndiotactic **polypropylene** with SEBS block copolymers
AU Setz, Stefan; Sticker, Florian; Kressler, Joerg; Duschek, Thomas; Muelhaupt, Rolf
CS Inst. Makromolekulare Chemie Freiburger Materialforschungszentrum, Albert-Ludwigs-Univ. Freiburg, Freiburg, D-79104, Germany
SO J. Appl. Polym. Sci. (1996), 59(7), 1117-28
AB Blends of poly(styrene)-block-poly(ethene-co-but-1-ene)-block-poly(styrene) (SEBS) with isotactic **polypropylene** (PP) and syndiotactic PP, resp., were investigated. The morphol. was obsd. by means of SEM and transmission electron microscopy (TEM). The cryofracture surfaces studied by SEM did not show any particles that were pulled out, so that a good compatibility between SEBS and different PPs could be assumed. The multiphase character of the blends could be well detected by TEM of **RuO4** stained samples. TEM micrographs of two-layer specimens revealed that SEBS tends to diffuse into the PP phase under formation of micelles. The block copolymer shows a reorientation phenomenon of large domains at the interface before the diffusion into the PP phase occurs. The interfacial strength as a function of annealing time was measured by a peel test of two-layer specimens. Mech. properties are studied and related to the blend morphol.

main TP1.J62

L16 ANSWER 28 OF 93 CA COPYRIGHT 2002 ACS

AN 119:60021 CA
TI Low-temperature chemical vapor deposition of ruthenium dioxide from **ruthenium tetroxide**: a simple approach to high-purity RuO_2 films
AU Yuan, Zheng; Puddephatt, Richard J.; Sayer, Michael
CS Dep. Chem., Univ. West. Ontario, London, N6A 5B7, UK
SO Chem. Mater. (1993), 5(7), 908-10
AB RuO_2 films were prepd. by low-temp. chem. vapor deposition from **RuO_4** on a variety of substrates including glass, Si and Al. The **RuO_4** precursor could be used in pure form or as a soln. in H_2O, CCl_4 or pentane. The best films, as judged by both purity and adhesion, were obtained with pure **RuO_4** as precursor by CVD at atm. pressure, by using a horizontal hot-wall reactor with the substrate at 150°. The RuO_2 films were characterized by **cond.** and by XPS, XRD and SEM/EDX **analyses**. Overlayers of lead zirconate titanate (PZT) were then prepd. and hysteresis in the Si/RuO_2/PZT/Au structure was demonstrated.

L16 ANSWER 32 OF 93 CA COPYRIGHT 2002 ACS
AN 117:213598 CA
TI Transmission electron microscopy of polymer blends
AU Wood, Barbara A.
CS Exp. Stn., DuPont Polym., Wilmington, DE, 19880, USA
SO Adv. Polym. Blends Alloys Technol. (1992), 3, 24-36
AB The microstructure of polymer blends was studied by TEM using staining method to develop contrast between blend components. Examples of micrographs of blend systems ranging from amorphous-amorphous to semicryst.-semicryst. and including components such as liq.-cryst. polymers, glass, and inorg. fillers were presented to demonstrate the staining techniques. The microscopic damage process of cavitation was visualized in toughened material damaged by impact.

L16 ANSWER 42 OF 93 CA COPYRIGHT 2002 ACS
AN 113:173885 CA
TI The use of **ruthenium tetroxide** in studies of polymer blends by scanning electron microscopy
AU Ohlsson, Bertil; Toernell, Bertil
CS Chem. Cent., Lund Inst. Sci. Technol., Lund, S-221 00, Swed.
SO J. Appl. Polym. Sci. (1990), 41(5-6), 1189-96
AB Flat samples of blends of **polypropylene** (I) and triblock SBR rubber or hydrogenated SBR (SEBS) were contrasted with **RuO_4** and studied in a SEM provided with a detector for back-scattered electrons. The images showed the SEBS phase as bright areas with dark dots and the I phase as dark. The dots in the bright SEBS areas corresponded to the unstained EB-domains of the triblock SEBS polymer. The technique used provided back-scattered electron detector images of high resoln. This is a consequence of the intrinsic elec. cond. conferred to the sample surface by the Ru species deposited there during staining. *Treatment with **RuO_4** vapor conferred elec. cond. to the stained areas*, which explains the high resoln. obtained with the present technique.

L16 ANSWER 43 OF 93 CA COPYRIGHT 2002 ACS
AN 113:90579 CA
TI Trapping-filter method for volatile ruthenium **determination** in gases, especially from radioactive waste treatment
IN Hagiwara, Minoru
PA Ishikawajima-Harima Heavy Industries Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
PI JP 02069658 A2 19900308 JP 1988-221980 19880905

AB The method comprises: (1) trapping RuO2 in a sample gas using a 1st filter; (2) adding a reducing agent in the sample gas to convert **RuO4** to RuO2; (3) transporting the sample gas to a 2nd filter to trap RuO2; and (4) detg. RuO2 in the 2nd filter, and thereby **detg. RuO4**.

L16 ANSWER 51 OF 93 CA COPYRIGHT 2002 ACS
AN 106:91861 CA
TI Present status of **volatile** ruthenium in **analytical** chemistry and health physics
AU Watari, Kazuo; Imai, Kiyoko; Nishimura, Yoshikazu; Koda, Yoshio
CS Natl. Inst. Radiol. Sci., Chiba, 260, Japan
SO Nihon Genshiryoku Gakkaishi (1986), 28(6), 493-500
AB A review of 61 refs. Chem. properties of **volatile** Ru are described with special ref. to its practical chem. sepn. The chem. form, classification and chem. characteristics of **volatile** Ru; chem. properties of **RuO4**; oxidative distn. of Ru with Cl2; radioactive detn. of Ru in seawater, gas chromatog. sepn. of Ru; metabolic pathway of **volatile** Ru in rats; and radiation exposure accident involving **volatile** Ru.

L16 ANSWER 53 OF 93 CA COPYRIGHT 2002 ACS
AN 105:209651 CA
TI Lamellar morphologies of melt-crystallized polyethylene, isotactic **polypropylene** and ethylene-propylene copolymers by the **ruthenium tetroxide** staining technique
AU Sano, Hironari; Usami, Takao; Nakagawa, Hideaki
CS Plast. Lab., Mitsubishi Petrochem. Co. Ltd., Yokkaichi, 510, Japan
SO Polymer (1986), 27(10), 1497-504
AB Lamellar morphologies of melt-crystd. polyethylene (I), isotactic **polypropylene** (II), and ethylene-propylene copolymer (III) samples were investigated by extending the technique of **RuO4** as a staining agent for the observation of ultra-thin sections using TEM. The excellent image contrast due to Ru made it possible to observe the twisting lamellae of I and the cross-hatched-type lamellae of II. The lamellar thicknesses were in good agreement with those derived by the small-angle x-ray scattering method. Some applications of the technique were carried out on the surface structure of injection-molded II and the domain structure of III.

Main TP156, P6 P6

L16 ANSWER 57 OF 93 CA COPYRIGHT 2002 ACS
AN 98:161455 CA
TI **Ruthenium tetraoxide** staining of polymers for electron microscopy
AU Trent, John S.; Scheinbeim, Jeny I.; Couchman, Peter R.
CS Dep. Mechan. Mater. Sci., Rutgers, State Univ. New Jersey, Piscataway, NJ, 08854, USA
SO Macromolecules (1983), 16(4), 589-98
AB **RuO4** stained thin films of both satd. and unsatd. polymer systems that contain in their unit structures ether, alc., arom., or amide moieties. High-d. polyethylene, linear polyethylene wax, poly(vinyl Me ketone), and isotactic and atactic **polypropylene** were also stained. **Ruthenium tetraoxide** did not stain poly(Me methacrylate), poly(vinyl chloride), poly(vinylidene fluoride), or polyacrylonitrile. Optical and electron micrographs demonstrating the utility of this staining agent are presented and the action of **RuO4** on the stained polymers is discussed in terms of **RuO4**-small-mol. interactions.

Main mic QD380, M3

L16 ***ANSWER 65 OF 93*** CA COPYRIGHT 2002 ACS
AN 90:114382 CA
TI Radioactivation **determination** of ruthenium
AU Koda, Yoshio; Kawajima, Tatsuro; Yamamoto, Toshio

CS Gov. Ind. Res. Inst., Nagoya, Japan
SO Kyoto Daigaku Genshiro Jikkensho Gakujutsu Koenkai Koen Yoshishu (1976), 10, 25-7
AB Because of the paucity of anal. data for Ru in materials in general, Ru was detd. in a large no. of inorg. compds. and 2 types of seaweeds by neutron activation. The sample was oxidized, the **volatile RuO4** was captured on a polyethylene film placed on the mouth of the flask, and the film was irradiated in a reactor at 1.9 x 1013 neutrons cm-2 s-1. Since the NaI(Tl) detector had low resoln., the 511-keV peak had to be substracted in order to obtain the area under the 103Ru 497-keV peak. When using a 1-g sample, the detection limits were 1 and 5 ppb Ru with a Ge(Li) and NaI(Tl) detector, resp.

L16 ANSWER 73 OF 93 CA COPYRIGHT 2002 ACS
AN 83:141358 CA
TI Voltammetry of ruthenate. **Determination** of ruthenium from ruthenate electroreduction
AU Bardin, M. B.; Nguyen Phuoc Thanh
CS V. I. Lenin Kishinev State Univ., Kishinev, USSR
SO Zh. Anal. Khim. (1975), 30(4), 765-9
AB Ru can be detd. quant. from the 1st wave of Ru redn. in a >8N NaOH medium, where the current is fully limited by diffusion. The diffusion current is directly proportional to ruthenate concn. in the range 1 X 10-4-10-3M. O dissolved in the electrolyte and 8-fold excess of Pd(II), 4-fold Rh(III), and 6-fold Ir(IV) do not interfere; Pt(IV) and OS(VIII) do. The method of preliminary sepn. of Ru as **RuO4** does not affect the 1st wave parameters. The electrochem. redn. of **RuO4** can be used for the inverse voltammetric **detn**. of **RuO4** after prior accumulating of the ppt. RuO2.xH2O on the electrode surface.

L16 ANSWER 93 OF 93 CA COPYRIGHT 2002 ACS
AN 2:4126 CA
OREF 2:971e-g
TI **Detection** of Ruthenium in Platinum Alloys
AU Orlow, N. A.
CS Stajara, Russia
SO Chem.-Ztg. (1908), 32, 77
AB A sample of the alloy is fused with lead, the lead is extracted with nitric acid and the residue ignited in air to remove osmium. The resulting mixture of Pt, Ir, Rh and Ru is then heated with KNO3 and KOH. The cold mass is now extracted with water and then treated with excess of HNO3, which causes the following reaction: 2K2RuO4+4HNO3=**RuO4**+Ru(OH)4+4K NO3. The brown solution is placed in a beaker, flask or test-tube, preferably the latter, covered with ordinary filter paper, then, if Ru is present, a black coating, due to vapors of **RuO4**, will collect on the under side of the paper after 12-24 hrs. With this method 0.01 g. Ru is easily detected. By burning the blackened paper, fusing the ash with KNO3 and KOH, and treating with water, an orange colored ruthenate may be extracted. The blackening of the filter paper occurs more quickly on warming, but thereby **RuO4** vapor may escape **detection**. Since OsO4 vapors produce a similar blackening, this compound must be completely removed by ignition.

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